

Amendments to the Claims

1 – 9. (Cancelled).

10. (Currently Amended) A wavelength division multiplex optical ring network comprising:

optical fiber arranged in a ring configuration;

a plurality of doped fiber optical amplifiers arranged in the ring, wherein a spectral response

in the ring is configured such that amplified spontaneous emission (ASE) noise₁

concentrated in a lasing peak separated in frequency from the wavelengths allocated to

communication channels, circulating around the ring in a lasing mode is used to clamp a

gain of each doped fiber optical amplifier;

a controller associated with each optical amplifier to control the optical amplifier to produce a

substantially constant output power or to maintain a substantially constant pump power;

and

detector circuitry configured to switch the optical amplifiers to a gain control mode after

detecting a loss of a lasing peak to maintain a gain substantially at a level provided by

the optical amplifiers prior to the detected loss.

11-12. (Cancelled).

13. (Previously Presented) The optical network of claim 10 wherein the optical amplifiers are

configured to switch to a constant output power mode after a predetermined delay after the gain

control mode has been established.

14. (Previously Presented) The optical network of claim 10 wherein the optical amplifiers are configured to switch to a constant pump power mode after a predetermined delay after the gain control mode has been established.

15. (Previously Presented) The optical network of claim 10 wherein the detector circuitry further comprises:

a plurality of splitters configured to tap a fraction of each optical amplifier's input power; and
a plurality of photodiodes configured to measure the input power.

16. (Previously Presented) The optical network of claim 15 wherein the plurality of splitters are further configured to tap a fraction of each optical amplifier's output power, and wherein the plurality of photodiodes are further configured to measure the output power.

17. (Previously Presented) The optical network of claim 15 wherein the detector circuitry further comprises a filter to pass only ASE noise, and a peak detector to detect the presence or absence of the lasing peak.

18. (Previously Presented) The optical network of claim 15 wherein the detector circuitry further comprises a filter to pass only ASE noise, and control logic to detect a simultaneous decrease in the powers of both the ASE noise peak and the total power input.

19. (Previously Presented) The optical network of claim 15 wherein the detector circuitry further comprises a detector to detect a decrease in the input power to each optical amplifier.

20. (Previously Presented) The optical network of claim 10 wherein a working point of the optical amplifiers is changed while in use to restore a level of the ASE peak in the event of a slow drift of the optical amplifiers.

21. (Currently Amended) A doped fibre optical amplifier for a wavelength division multiplex optical ring network comprising optical fibre arranged in a ring configuration, the optical amplifier comprising:

a controller configured to control an optical amplifier to produce a substantially constant output power, or to maintain a substantially constant pump power using amplified spontaneous emission (ASE) noise, concentrated in a lasing peak separated in frequency from wavelengths allocated to communication channels, circulating around a ring in a lasing mode to clamp a gain of the optical amplifier; and
detector circuitry configured to switch control of the optical amplifier to a gain control mode after detection of a loss of the lasing peak in which the gain before the loss of the lasing peak is maintained.

22. (Previously Presented) The optical amplifier of claim 21 wherein the detector circuitry is further configured to switch to a constant output power mode, or a constant pump power mode, after a predetermined delay after the gain control mode has been established.

23. (Previously Presented) The optical amplifier of claim 22 wherein the detector circuitry comprises:

splitters configured to tap a fraction of the input or output power of the optical amplifier; and
one or more detector components configured to measure the input and/or output powers.

24. (Previously Presented) The optical amplifier of claim 23 wherein the detector circuitry further comprises:

- a filter configured to pass only ASE noise; and
- a first detector component configured to detect a presence or absence of the lasing peak.

25. (Previously Presented) The optical amplifier of claim 23 wherein the detector circuitry further comprises:

- a filter configured to pass only ASE noise; and
- a first detector component configured to detect a simultaneous decrease in the powers of both the ASE noise peak and the total power input.

26. (Previously Presented) The optical amplifier of claim 23 wherein the detector circuitry further comprises a first detector component configured to detect a decrease in the power of the input to the optical amplifier.

27. (Previously Presented) The optical amplifier of claim 21 wherein a working point is changed in use to restore the level of the ASE peak the optical amplifier drifts.